

**Claims**

This listing of claims replaces all prior versions of claims previously presented:

1- 14 – Previously canceled

15. (Currently Amended): A real time PCR instrument comprising:

- an excitation unit comprising:
  - at least 1 light source capable of emitting light toward a reaction vessel containing fluorescent compounds,
  - a lightpipe being arranged for receiving light from the reaction vessel and capable of distributing homogeneously said light ~~for transmission to~~ into optical fiber bundles, wherein the light does not pass through a wavelength excluding device prior to being distributed into said optical fiber bundles.
- a detection unit comprising at least 5 separate fluorescent detector entities, each of said detector entities having a central detection wavelength, said wavelengths being distinct from each other by at least 25 nm,
- a plurality of at least 5 optical fiber bundles, each said bundle being arranged for receiving homogeneously distributed light from the lightpipe, and transmitting said light to said fluorescent detector entities,
- means for heating and cooling, and
- multiple reaction vessels for containing a reaction mixture,  
wherein said plurality of detector entities is capable of simultaneously detecting maximum fluorescence emission of at least five different fluorescent compounds, and wherein the excitation and detection units are located in separate housings.

16. (Previously Presented): A real time PCR instrument according to claim 15 comprising one light source.

17. (Previously Presented): An instrument according to claim 15, wherein said central detection wavelengths are selected from a group of range of wavelengths, said group consisting of 520-540 nm, 545-565 nm, 570-590 nm, 600-620 nm, 630-650 nm, 660-680 nm, and 700-720 nm.